

# Development of small and medium business (SMES) of mango dodol processing to increase the added value (a case study in Ujungjaya Village, Indramayu District, West Java)

**L Sulistyowati, P Pardian, N Syamsyiah and Y Deliana**

Department of Agricultural Economics and Social Science, Faculty of Agriculture,  
Padjadjaran University, Indonesia

E-mail : lies.sulistyowati@unpad.ac.id

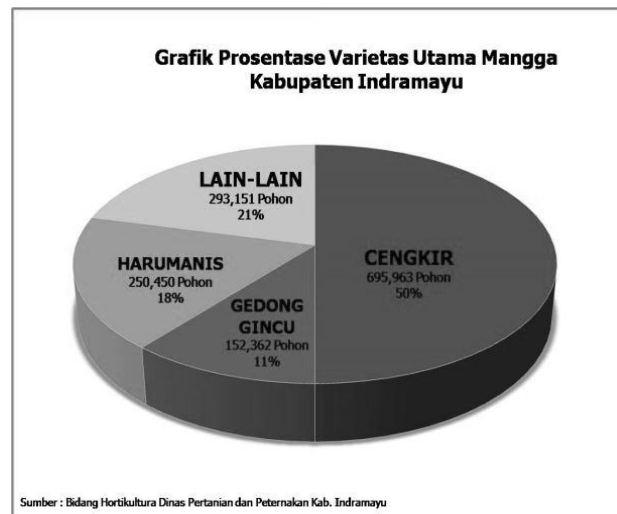
**Abstract.** In the national economic development in Indonesia, Small and Medium Enterprises (SMEs) become a priority to be developed, because SMEs can be the backbone of the populist economic system to reduce the problem of poverty. In addition, the development of SMEs is able to expand the economic base and can contribute to the increase of added value, in addition it would also serve to open employment opportunities in rural areas. Indramayu is one of the three mango production centers in West Java that face the problem that there are about 20% of the mangoes that is not worth selling. This opportunity is utilized by women who are members of KUB (Joint Business Group) to be processed into mango dodol at household scale. But this effort has not been widespread, only pioneered by a small portion of women. This study aims to observe the driving force of women to participate in the processing of mango dodol, and whether the mango processing business to become mango dodol is profitable, also how much added value obtained. This study uses case study method with interview for data collection, participant observation and documentation study. While the data analysis technique using Hayami Value-added Method and descriptive analysis. The results revealed that the factors that affect the women's participation in the processing of dodol is to increase family income, take advantage of spare time and take advantage of rejected mangoes. The added value obtained in mango dodol processing is Rp.50.600,00 per kilogram of input, with a value-added ratio of 52.8%. For the development of SMEs mangoes Training and socialization are needed for the good dodol processing and hygienic according to SOP (Standard Operational Procedure) from the relevant institutions, innovation in packaging, pioneering business partnerships with stores in the city of Indramayu and surrounding areas, and support financing from banks with an affordable interest rate.

## 1. Introduction

In the national economic development in Indonesia, Micro-Small and Medium Enterprises (SMEs) become a priority to be developed, because SMEs can be the backbone of the populist economic system to reduce poverty problems [16]. In addition, the development of SMEs able to expand the economic base and can contribute to increase added value, in addition to opening employment in rural areas. Indramayu is one of the 3 mango production centers in West Java. Data from the Department of Agriculture shows that the number of mango plants in Indramayu is the largest in West Java, which is about 1,391,926 trees, which consists of various types of mango. The most dominant varieties are cengkir (50%), then *harummanis* (18%), and *gedong –gincu* (11%) and others (18%). (Figure 1)



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**Figure 1. Number and Percentage of Mango Crops based on Varieties.**

The high mango production in Indramayu turns out to be the problem of about 20% of reject mangoes that are not worth selling, or if sold at very low prices. This opportunity is utilized by womens who are members of Joint Business Group (KUB) to be processed into mango dodol at household scale. With so many mango production, mango processing business become dodol, manisan, syrup, puree and others, will not lack of raw materials.

According to one KTNA Mango from Situbondo, with mango processing, the price is 7 times higher. Not only the price is high, the shelf life becomes longer, can last up to 6 months [2]. But the reality in the field, not all women are interested to process mango, although in Ujung Jaya, mango production is abundant. The mangoes dodol processing business has not expanded. Newly pioneered by a small part of women who are members of KUB Barokah.

This study aims to: 1). Know the driving factors of women interested in processing mango into dodol and 2). Analyze whether the mango processing business to be mango dodol is profitable, and how much added value it gained.

## 2. Research Methods

This study uses Case Study method, while data collection method through interview, participant observation and documentation study. According to [11] case study is a descriptive research that aims to give a detailed picture of the background, nature, character that is then made general things.

Collection technique is done by:

1. Observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the processes of observation and memory [15].
2. Interview, namely the process of obtaining information by means of direct question and answer with the respondent, where the data obtained in the form of things needed to complete the results of observation.

While the data analysis technique using Hayami Value-added Method [6] and descriptive analysis. Quantitative data were used to know the added value of mango dodol agroindustry, analyzed using Hayami method as follows:

**Table 1.** Procedures of the Added Value Calculation of Hayami Method

No	Variable	Value
<b>I. Output, Input and price</b>		
1	Output (Kg)	1
2	Input (Kg)	2
3	Labor (HOK)	3
4	Conversion Factor	$4 = \frac{1}{2}$
5	Labor coefficient	$5 = \frac{3}{2}$
6	Output Price (Rp/Kg)	6
7	Direct labor wage (Rp/HOK)	7
<b>II. Revenue and Profit</b>		
8	Raw material price (Rp/Kg)	8
9	Another input contribution (Rp/Kg)	9
10	Output Value (Rp/Kg)	$10 = 4 \times 6$
11	a. Value added (Rp/Kg)	$11a = 10 - 9 - 8$
	b. Value added ratio (%)	$11b = 11a / 10 \times 100\%$
12	a. Direct labor income (Rp/Kg)	$12a = 5 \times 7$
	b. Labor contribution (%)	$12b = 12a / 11a \times 100\%$
13	a. Profit (Rp/Kg)	$13a = 11a - 12a$
	b. Percentage of profit (%)	$13b = 13a / 11a \times 100\%$
<b>III. Reply Services to Owners of Factors of Production</b>		
14	Margin (Rp/Kg)	$14 = 10 - 8$
	a. Direct labor income	$14a = 12a / 14 \times 100\%$
	b. Another input contribution (%)	$14b = 9 / 14 \times 100\%$
	c. The Benefits of the Company Owner (%)	$14c = 13a / 14 \times 100\%$

Source : [6]

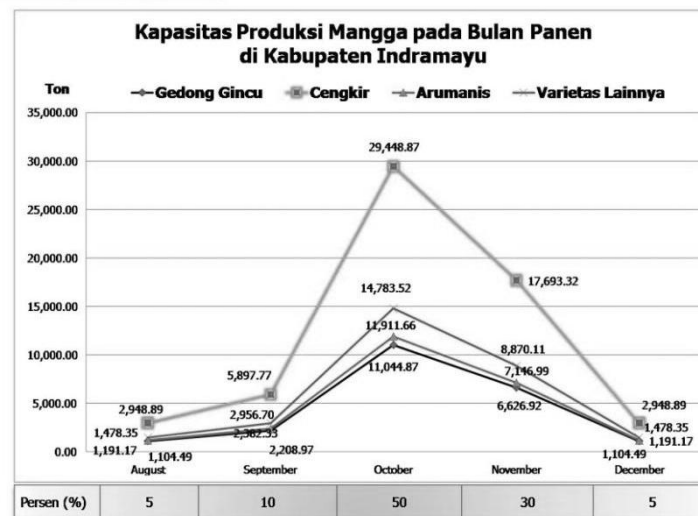
### 3. Results and Discussion

#### 3.1. Potency of mango in Indramayu Regency

Ujung Jaya is one of the villages in Widasari Sub-district of Indramayu Regency located east of Indramayu Regency which has an area of  $\pm 406$ , and has a population of 3,376 people, with a population of 1739 women and a population of 1,637 men [9]. Villages that have a residential area of 35 ha / this has access to good and affordable by limited by two major roads, namely pantura and the old road, so passed by public transportation between cities, such as buses and transport in the city, such as Kopayu, so accessibility very good.

The majority of Ujung Jaya villagers work as farmers and farm laborers, with a total population of 654 workers and 312 people. This is because the village has a large agricultural land, which is 344ha /, with the number of heads of households who have rice field is 202 Head of Family. In addition to farming, many people also become traders, craftsmen, private employees, domestic workers, as well as TKI (Tenaga Kerja Indonesia).

Ujung Jaya village is also known as Indramayu mango center. In addition to the garden area, many mango trees adorn the homes of their citizens. Therefore, during the harvest season, food production in Ujung Jaya will be very abundant. Ujung Jaya Mango has been widely marketed to various surrounding areas. Not only the abundant production, Indramayu original mango was known to have a distinctive sweet taste. Meanwhile, when viewed from the volume of production, the production of mango cengkir most compared to other mangoes[7]. (Figure 2).



**Figure 2.** Mango Production Capacity in Harvest Period in Indramayu District

In addition to selling in the form of fresh fruit, Indramayu mango is often also processed into processed food products such as dodol, syrup, juice, jam and rujak mango packaging. Most processed products made from mango are produced by home industry. The business location of mango processing industry is spread all over Indramayu. One of mango processed mangoes from Ujungjaya village, Widasari sub-district, which started to produce processed mango Indramayu since 2008 [7]. Joint Group (KUB) Barokah is one of the centers in Ujung Jaya village in producing processed mango, such as dodol manga. In producing dodol mango branded 'Dodol Mangga Syauqi', KUB Barokah uses the main ingredient of original mango. To obtain the results of sweet mango dodol, mango used comes from a mixture of three types of ripe mango, namely sweet fragrant mango, mango gedong gincu, and mango cengkir. Processing mango into dodol is included in the agro-industrial sub-system, which is likely to increase the income of mango farmers.

The definition of Agroindustry according to the [3] is an activity that processes primary agricultural commodities into processed products either intermediate-product or end-product. This is in line with [1] and [5] which states that agro-industry is the business of processing agricultural raw materials into various products that consumers need.

Further, [12] and [13] suggests that there are five main reasons why agro-industries are important to become locomotives for national economic growth, namely: (a) Processing industries capable of transforming comparative advantage into competitive advantage, which in turn will strengthen the competitiveness of Indonesian agribusiness products; (b) The product has added value and a large market share so that progress can affect the growth of the national economy as a whole; (c) Has a great linkage both upstream and downstream, so as to attract the progress of other sectors; (d) Have a local raw material base (comparative advantage) that can be upgraded to ensure sustainability; (e) Has a slab to transform the national economic structure from agriculture to industry with agro-industry as its driving force.

Strategies in the development of agroindustry should be adjusted to the characteristics and problems of the agroindustry concerned. In general, according to [14] the problems faced in the development of agro-industry is:

1. The nature of agricultural products that are easily damaged, bulky so that required technology of packaging and transportation that can overcome the problem.
2. Most agricultural products are seasonal and heavily influenced by climatic conditions so that the aspect of continuity of agro-industry production is not guaranteed.
3. The quality of agricultural products and agro-industry produced is generally still low so that there is difficulty in market competition both domestically and in the international market. Most small industries (SMEs) use simple technology.

### 3.2. Processing of mango dodol

In producing dodol mango branded 'Dodol Mangga Syauqi', using the main ingredient of original mango. To obtain the result of sweet mango dodol, mango used comes from a mixture of three types of mango mature. That is sweet mango, mango gedong gincu, and mango cengkir. Once peeled and cleaned, the mango is then sliced in a container. The sliced mango was then blended to become a mango porridge. Then the mango porridge is divided into two parts. First dough, added sticky rice flour, rice flour, coconut milk and salt. Second dough added red dangula sugar. Then it is heated, and the dough is mixed. Keep heated until the slices of mango become porridge and water content decreases, so the calis and leaving mango juice. Then pour into the pan, cooled overnight. After that can be cut, then packed for ready to market (Figure 3). "This mango dodol can hold up to a month without using preservatives. I only use mango and sugar only" said craftsman dodol mango.

If averaged, craftsmen in the tip of this Jaya can spend about 50 pounds of mango per day to make dodol. Production of mango dodol it is marketed to the area of Indramayu, Cirebon and brass. In fact, through the online sales system, he can also market their production to the outside of Java Island. With the help of Diskopindag Indramayu, Craftsman in KUB Barokah has completed its production with halal certificate from MUI as well as certificate of Household Food Industry (PIRT) from Dinas Kesehatan. This is to convince their customers that the mango dodol they produce is completely halal and healthy. Most of the dodol processing crafters are women, aged between 35-55 years. The reason for the workforce is to help the husband to increase the daily needs of the family, because the husband's work has not been able to meet the daily needs (50%) and use the mango reject (20%). In addition, there is a small proportion which states that working to fill the spare time (10%), helping his brother's business (10%) and to socialize with friends (5%) and others (5%).



**Figure 3.** Flow Chart of Mango Dodol Processing

While the reason work in SMEs processing dodol because the location of SMEs close to home, comfortable, strict or loose regulations, not many sanctions, permits if there is family needs, working hours are not too early, the owner of SMEs friendly, a good work environment. Related to the Added Value, [6] mentioned that, the added value is the difference between the value of the commodities that are treated at a certain stage with the value of the production cost used during the production process takes place. There are two factors that influence the added value of technical factors and market factors. Engineering factors that influence the product capacity, the amount of raw materials, and labor. Market factors include output prices, wage labor, fees and salaries.

### 3.3. Analysis of added value of mango dodol

Added value may be defined as the incremental value to a commodity as it undergoes processing in the production stream.[6]. [13] defined added value as the “difference between output value and the input costs”.

Hayami value-added analysis method is one of the analysis that is often used and has advantages such as:

1. More appropriate for agricultural products. Can know the amount of added value, output value and productivity.
2. It is known to the extent of remuneration to the owners of factors of production.
3. Hayami's value added principle can be applied also to other subsystems outside processing, for example for marketing activities.

Value added analysis on Hayami method also has weaknesses:

1. The average approach is not appropriate if applied to a business unit that produces many products from one type of raw material.
2. Can't explain by products.
3. It is difficult to determine which comparator can be used to conclude whether the remuneration of the factors of production is appropriate.

From Table 2. It can be concluded that mango dodol processing business is very profitable, that is Rp.44.405 per kilogram, or 87.75% of output value per kilogram. While the added value obtained from the processing of mango dodol is Rp. 50,600 per kilogram of output, or 52.80% of the output value.

Therefore, the mango dodol processing business is potential to continue to be socialized and developed, in an effort to increase the income of mango farmers and the communities involved in mango agro-industry. However, efforts to develop SMEs mangoes are not running smoothly, because they face various constraints, both internal and external, as faced by this Barokah KUB.

Although the production of mango dodol from KUB Barokah is favored by consumers, and demand is high, it is still experiencing difficulties. It mainly concerns raw material of mango that is not continuous. In the mango harvest season is over, often have difficulty obtaining raw materials of mango. In addition, also often difficult to obtain labor. Often, the workers choose to work in the fields during the growing season and rice harvest, rather than making mango dodol.

Related to the development of SMEs, [8] explains that the classical problem of SMEs in Indonesia in developing its business can be divided into two, namely funding and marketing. The government has tried to provide a program for such a solution, but in reality it has not been effective yet, due to lack of rationality in implementation and tend not to see SMEs as actors who can progressively participate in the competition.



**Table 2.** Value Added Analysis of Mango Dodol Processing Based on Hayami Method.

No	Variable	Value
<b>I. Output, Input and price</b>		
1	Output (Kg)	12,5
2	Input (Kg)	8
3	Labor (HOK)	9,5
4	Conversion Factor	1,56
5	Labor coefficient	1,18
6	Output Price (Rp/Kg)	61.430
7	Direct labor wage (Rp/HOK)	5.250
<b>II. Revenue and Profit</b>		
8	Raw material price (Rp/Kg)	16.000
9	Another input contribution (Rp/Kg)	29.230
10	Output Value (Rp/Kg)	95.830
11	a. Value added (Rp/Kg)	50.600
	b. Value added ratio (%)	52,8
12	a. Direct labor income(Rp/Kg)	6.195
	b. Labor contribution (%)	12,24
13	a.Profit (Rp/Kg)	44.405
	b.Percentage of profit (%)	87,75
<b>III. Reply Services to Owners of Factors of Production</b>		
14	Margin (Rp/Kg)	79.830
	a. Direct labor income (%)	7,76
	b. Another input contribution (%)	36,61
	c.The Benefits of the Company Owner (%)	55,62

Furthermore [1] also identified the problem of SMEs namely limited access to global markets and low capacity to increase value added (Value added). Therefore, for the development of SMEs of mango dodol processing, it is necessary to train and socialize the correct and hygienic processing of dodol from the related Office, innovation in packaging, pioneering business partnership with shop in the city of Indramayu, and support financing from banks with an affordable interest rate.

#### 4. Conclusions

The results revealed that the factors that affect the participation of women in SMEs mango dodol processing is to increase family income, take advantage of spare time and take advantage of reject mango. The added value obtained in mango dodol processing is Rp.50.600,00 per kilogram of input, with a value added ratio of 52.8%. While the profit earned by Rp.44.405 per kilogram, or 87.75% of the output value per kilogram.

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